



SNC1D BIOLOGY

SUSTAINABLE ECOSYSTEMS
 ☛ Benefits of Natural Ecosystems
 (P.~)

Activity: Benefits of Natural Ecosystems

ISSUE
 Recreational activities and an opportunity to appreciate the beauty of nature are just two of the benefits that ecosystems provide to us. Ecosystems offer a wide variety of benefits to humans and for the biosphere in general.

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Activity: Benefits of Natural Ecosystems

INSTRUCTIONS

A. While reading/listening to the following presentation, complete a chart similar to the one below listing the benefits of the following aspects of our natural ecosystems. You should try to have three examples for each.


Benefit	Examples
cultural	
products	
environmental	
economic	
other	

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Benefits of Natural Ecosystems

Natural ecosystems provide humans with many services. For example, ecosystems:

- supply food, fuel, natural resources, and water
- cycle nutrients and decompose wastes
- regulate climate
- the animals they contain help pollinate crops and disperse seeds
- provide humans with cultural and recreational opportunities.



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Product Benefits

Ecosystems also provide more than just natural beauty and a place to relax. Each day we use products from ecosystems that help to make our lives easier. Plants provide us with wood, rubber, fabrics, dyes, food, and medicines. Animals provide us with leathers, oils, bones, and beeswax. Some people hunt animals and collect plants for personal/commercial use.

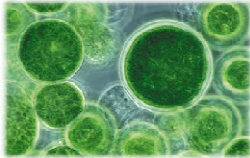


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Environmental Benefits

Ecosystems also provide several environmental benefits including:

- **producing oxygen** – microscopic organisms in the ocean (i.e. phytoplankton or algae) produce about 50% of the oxygen in the atmosphere

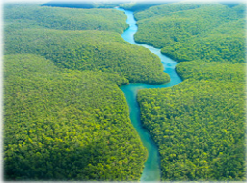


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Environmental Benefits

Ecosystems also provide several environmental benefits including:

- **moderating climates** – plants in many different ecosystems, including tropical rainforests, take in carbon dioxide gas for photosynthesis (carbon dioxide helps trap thermal energy that warms Earth's surface so changes in the amount of carbon dioxide can influence climates on Earth)




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Environmental Benefits

Ecosystems also provide several environmental benefits including:

- **filtering pollutants** – certain plants and organisms can remove and destroy some of the harmful chemicals in the air, water, and soil which reduces the amount of pollution in the environment




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Environmental Benefits

Natural ecosystems can also support industries as well as provide valuable products such as:

- **Forestry:** More than 65% of Ontario's land surface is covered with forests. Ontario's forests provide \$18 billion worth of products each year and employ more than 80 000 people. Another 30 000 people in Ontario have jobs that are related to forest ecosystems, including fishing and trapping, tourism, and parks management.




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Environmental Benefits

Natural ecosystems can also support industries as well as provide valuable products such as:


- Ecotourism:** Ecotourism, which is a growing industry that relates tourism to the ecology of an area, also creates jobs. Hotels, restaurants, transportation services, arts organization, and companies that organize guided tours all provide jobs in a local area.



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Other Benefits

Ecosystems also help to protect us from physical threats, such as erosion and flooding. The roots of plants, which are anchored in soil, help to reduce soil erosion by wind and water. Ecosystems such as wetlands absorb surface water. Then they slowly release the water both underground and at the surface, which prevents flooding after a heavy rain.



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Benefits of Natural Ecosystems

Benefit	Examples
cultural	<ul style="list-style-type: none"> recreation education spirituality
products	<ul style="list-style-type: none"> lumber food medicine
environmental	<ul style="list-style-type: none"> climate moderation water & air purification oxygen supply & nutrient cycling
economic	<ul style="list-style-type: none"> jobs exports tourism products & services
other	<ul style="list-style-type: none"> erosion reduction flood prevention balance of wildlife maintained

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Monetary Value of the Benefits

NOTE!
It is difficult to put a monetary value on the beauty of wildlife and wilderness experiences. However, it is possible to estimate the value of many of the ecological services provided by natural ecosystems. Globally, the value of natural terrestrial ecosystems ranges into the trillions of dollars per year.



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Check Your Learning

1. Grass is useful. Describe the ecological services that grass performs in a hay field, on a golf course, or along the shoulder of a highway.

hay field – food
golf course – recreation
highway – erosion prevention

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Check Your Learning

2. Provide reasons why a renewable resource is more valuable than a non-renewable resource.

a non-renewable resource is gone once it is used up whereas a renewable service can continue to provide for generations to come but it must be cared for and respected by humans to remain healthy and valuable (i.e. sustainability)

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✓ Check Your Learning

3. What are three ways that ecotourism can help an ecosystem.

- hotels, restaurants, transportation services, arts organizations, and companies that organize guided tours all provides jobs in a local area
- goods such as boats, fishing equipment, specialized clothing, ... are needed so people can enjoy the outdoors
- helps people learn about the ecosystem which will make them (hopefully) more aware of the ecosystem and how humans are impacting it (i.e. education)
